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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/719,803

11/21/2003

Himanshu Pokharna

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3345

8791

7590

01/18/2007

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EXAMINER

EDWARDS, ANTHONY Q

ART UNIT

PAPER NUMBER

2835

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/719,803	POKHARNA ET AL.	
	Examiner	Art Unit	
	Anthony Q. Edwards	2835	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11, 14-20 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-11 and 14-19 is/are allowed.
- 6) ☒ Claim(s) 1-8, 20, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

The drawings were received on December 22, 2006. These drawings overcome the objection in the Final Office Action mailed September 20, 2006.

### ***Response to Arguments***

Applicant's arguments, see the Amendment and Response, filed December 22, 2006, with respect to the rejection(s) of claim(s) 1-11, 14-20 and 22-24 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,510,052 to Ishikawa in view U.S. Patent No. 6,657,121 to Garner.

In response to applicant's argument that there is no suggestion to combine the above references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Although display circuitry is not specifically mentioned in Garner, successful cooling of a variety of computer technologies is mentioned. See col. 2, lines 25-38.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-7, 20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,510,052 to Ishikawa in view U.S. Patent No. 6,657,121 to Garner. Referring to claim 1, Ishikawa discloses a notebook computer system, comprising a first heat sink (32) to passively dissipate heat from the notebook computer system, a sensor system (91a, 91b) to monitor a temperature of a plurality of components (see Fig. 3), wherein the components comprise a display (3), inherently including display circuitry, and a CPU (12), and a second heat sink (71) coupled to the first heat sink, wherein the second heat sink is enabled if the notebook computer system detects that at least one of the components of the notebook computer system exceeds a predefined temperature threshold. That is, the passive heat sink (32) and display circuitry (not shown) combine to produce a heat energy value (i.e., temperature). Therefore, the heat sensor (91b) monitors a composite temperature of the display. See Figs. 3, 11 and 12, as well as col. 12, lines 57-65. Ishikawa also teaches providing at least one evaporator (31/34) coupled to a system component, i.e., CPU (12). See col. 8, lines 34-57. Ishikawa does not specifically teach providing a plurality of evaporators.

Garner teaches providing a thermal management system to manage the fluxes generated by various electronic devices or components, wherein the thermal

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management system includes a plurality of evaporating plates (70) operatively engaged with a plurality of computer components (15) in a closed-loop system. See Figs. 2 and 3 and col. 5, lines 48-51. Although display circuitry is not specifically mentioned in Garner, successful cooling of a variety of computer technologies is mentioned. See col. 2, lines 25-38.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Ishikawa to include more than one, i.e., a plurality of evaporators or evaporator plates, to remove heat from additional electrical components within the system, as taught by Garner, since the device of Garner would allow for the efficient removal of heat from other heat sensitive electrical components of Ishikawa, such as the display.

Referring to claim 2, Ishikawa in view of Garner disclose the notebook computer system as claimed, except for the first heat sink dissipating approximately 2-20 watts of power. It has been held that it is not inventive to discover the optimum or workable ranges by routine experiment (see MPEP 2144.05; *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

It would have been obvious, therefore, to one of ordinary skill in the art at the time of the invention to further modify the device of Ishikawa to limit the amount of heat dissipated from the first heat sink to within 2-20 watts of power, since monitoring and controlling the amount of heat dissipated from the first heat sink provides a benchmark for monitoring and controlling thermal management of the entire system.

Referring to claim 4, Ishikawa in view of Garner disclose a notebook computer system, wherein the first heat sink (32) passively dissipates heat through a display (3). See col. 12, lines 37-44 of Ishikawa.

Referring to claims 5 and 6, Ishikawa in view of Garner disclose a notebook computer system, wherein the display (3) comprises a first plate (43a) coupled to a second plate (43b), the second plate comprising a second groove (see Fig. 10 of Ishikawa), wherein a working fluid for heat transfer is distributed across the surface area of the display through grooves (45) between the first plate and the second plate, and wherein the grooves (45) between the first plate and second plate has a plurality of turns (44) to improve temperature spreading, respectively. See Fig. 3 and col. 12, lines 37-41 of Ishikawa. Although a first groove in the first plate is not specifically taught, it would have been obvious to one having ordinary skill in the art of heat dissipation plates with tubes or grooves to includes a first and second groove, since such a modification would have involved a mere change in shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. *In re Daily*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Referring to claim 7, Ishikawa in view of Garner disclose the notebook computer system as claimed, except for both the first and the second plates being approximately one millimeter thick. It has been held that "in considering the disclosure of the reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to

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draw therefrom" (see MPEP 2144.01; *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make further modify the device of Ishikawa to make both the first and second plates of Ishikawa approximately one millimeter thick, since such thin plates (e.g., approximately one millimeter thick) would provide sufficient structural support for the circulating paths or grooves of the heat sink in the display, while also providing the structure in a light weight form.

Referring to claim 20, Ishikawa in view of Garner discloses a thermal management system, comprising means for cooling a notebook computer passively (32), means for detecting a temperature of a plurality of notebook computer system components, wherein the components include a display (3), inherently including display circuitry, and a CPU (see Fig. 3 and the corresponding specification of Ishikawa), means for removing heat from the components using a plurality of evaporators coupled to the components (see Fig. 3 of Ishikawa and Figs. 2-4 of Garner), and means for cooling the notebook computer system actively if a component of the computer system exceeds a threshold temperature (see Figs 3, 11 and 12, as well as col. 12, lines 57-65 of Ishikawa).

Referring to claim 22, Ishikawa in view of Garner inherently disclose a thermal management system, further comprising means for increasing a life of a battery of the notebook computer system, since the fan control according to Fig. 12 of Ishikawa would increase the life of the battery.

Referring to claim 23, Ishikawa in view of Garner inherently disclose a thermal management system, further comprising means for spreading a working fluid temperature across a display (3) of the notebook computer system. See col. 12, lines 37-44 of Ishikawa.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of Garner, and further in view of U.S. Patent Application Publication No. US2004/0095721 to Ellsworth, Jr. et al. ("Ellsworth" hereinafter). Ishikawa, as modified, discloses the invention as claimed, except for the second heat sink being enabled if the notebook computer system exceeds a predefined power consumption threshold. Ellsworth teaches providing an auxiliary heat removal system (210) or (310), which is enabled when predefined power consumption of a heat source (240) is reached. See Fig. 2 and paragraph 0032, second column of the page 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Ishikawa to provided a heat sink or heat removal system that is enabled when predefined power consumption of a component is reached, as taught by Ellsworth, since the device of Ellsworth would increase the coefficient of performance of the cooling system of Ishikawa as modified by simply monitoring both the power and the temperature output of the heat producing component.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of Garner, and further in view of U.S. Patent No. 6,181,555 to Haley et al. Ishikawa, as modified, discloses the invention as claimed, except for further comprising



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an insulation layer to protect display circuitry from heat emanating from the first plate and the second plate. Haley et al. teach providing an insulation layer (102), between an LCD panel (101) and a thermo-plate or heat sink (104) to protect display circuitry in the LCD panel (101). See Fig. 2 and col. 3, lines 12-20 of Haley et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention further modify the device of Ishikawa to provide the notebook computer system with an insulation layer between the LCD panel and the combined first sink, as taught by Haley et al., since the device of Haley et al. would provide protection for sensitive components in the display of Ishikawa, as modified, against heat dissipating from the portion of the first heat sink facing the display.

***Allowable Subject Matter***

Claims 9-11 and 14-19 are allowed. The following is an examiner's statement of reasons for allowance: claims 9 and 15 are allowable over the combination of Ishikawa in view of Garner, since the claims recite the specific limitation of a pump coupled to the plurality of evaporators and the evaporators coupled to a plurality of component, the components including a display circuitry. The system of Gardner, however, which has a plurality of evaporators, expressly teaches that there are no moving parts in the system. As such, the inclusion of a pump reads over the prior art combination. Claims 10, 11 and 14 depend, either directly or indirectly, from claim 9. Likewise claims 16-19 depend, either directly or indirectly, from claim 15. These claims are, therefore, allowed for at least the same reasons.

Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the claim recites a similar limitation that's provided in the allowed claims, i.e., a pump coupled to the plurality of evaporators and the evaporators coupled to a plurality of component, the components including a display circuitry.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Q. Edwards whose telephone number is 571-272-2042. The examiner can normally be reached on M-F (7:30-600) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2800, ext. 44. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 17, 2007

aqe

A handwritten signature in black ink, appearing to be 'A. Vortman', with a long horizontal line extending from the end of the signature towards the right.

**ANATOLY VORTMAN  
PRIMARY EXAMINER**